EDUCATIONAL SPECIFICATIONS FOR
SALEM SCHOOL

PROJECT RATIONALE

Salem School currently houses students from Pre-K - Grade 8. New England School Development Council (NESDEC) and State enrollment projections indicate that the school enrollment has peaked and is not projected to exceed its current level of enrollment of 467 Pre-K – Grade 8 students for the next 5 – 10 years. Based on NESDEC's most current enrollment projections, the enrollment Pre-K – Grade 8 is projected to be somewhere in the low to mid 400 students. In a long-range facility planning study prepared by NESDEC, the planned operating capacity of the building is 450 students. Currently, there is sufficient space to provide for 29 classrooms Pre-K - Grade 8. Although all attempts are made to cluster the grade level classrooms as Pre-K, K, 1- 4 and 5-8 this is not always possible due to fluctuations in enrollment. Currently, we have designated specialized spaces of varying sizes to meet the needs of our special needs students. We have a library media center, one cafeteria/multi-purpose, one dedicated gym, dedicated music classrooms and two dedicated art rooms. Any remaining spaces are used to house our middle grades health and global language programs. In past years several of these programs, e.g. health, middle school general and instrumental music and global language, have been "on a cart" programs or as in the case of instrumental music take place, when scheduling is possible, in our inadequate band room or on the gym stage. For the past two years, these programs have taken place in classrooms, due to decreasing enrollment.

Architects and engineers have performed a facility assessment by reviewing the existing facilities to evaluate the condition of the physical plant in terms of site and buildings. Salem School was first constructed in 1940, with a series of additions: 1956, 1963, 1973, 1988, and 1994. As a result of our facility study we find that we have to replace and/or modify several of our existing building systems.

The site has a current area of 22.63 acres.

After this facility review the Board of Education remains committed to maintaining a Pre-K-8 facility on the current site. The building will continue to support community needs as it has to the present date, with the gym and cafeteria spaces being available on a first come first served basis. The building will also be designed to provide for the existing population since at the point of this proposal an increase is not anticipated.

LONG-RANGE PLAN, PROJECT

Renovate the existing pre-1994 building making minor programmatic alterations, improvements to the building's envelope and mechanical, electrical and life-safety.

Facility renovation will allow Salem to:

- Improve academic spaces for Salem students at the pre-k, Kindergarten and First Grade levels, by creating flexibility between and in existing rooms; and
- Insure safe and appropriate learning environments for Salem students.

Salem plans to continue to utilize Salem School in its current capacity, and with appropriate physical plant upgrades, as a Pre-K through 8 school facility.

BOE Approved 4/6/09
Revised BOE Approval: 3/14/11

FACILITY ASSESSMENT & RECOMMENDATIONS

Power

Three phase utility power is fed to the building from overhead high voltage lines on Route 85. The service drop is located on a utility pole near the north end of the property and runs underground to a pad mounted transformer located at the northeast corner of the 1973 building.

The pad mounted transformer steps the voltage down to 120/208 Volts, 3 phase, 4 wire for customer utilization and again runs underground to the main electrical room which is located in the lower level of the 1973 building.

Part of an overall electrical system improvement plan will be to upgrade the electrical service to accommodate expanding and upgraded systems and future technologies.

ARCHITECTURAL

Roof

The total roof area approximates 79,204 SF and is divided into 15 areas and three different types of roofing.

Building Date	Roof Type	Condition	Expected Life/Comments
1940	Shingle roof	Fair-Poor	Replacement recommended
1956	EPDM (rubber)	Poor	Replacement recommended
1963	EPDM	Fair-Poor	Replacement recommended
1973	Modified Bitumen	Fair	Replacement recommended
1973 Gym	Same as above		
1988	Same as above	Fair	At end of expected life
1994	EPDM	Good	10-15 years

Replacement should occur on the 1940 through 1988 building areas.

Exterior Wall System

The exterior wall system is most generally made up of different types of masonry, both exterior and interior. Earlier building areas do not have insulation, nor a working cavity within the masonry.

We recommend that these walls be repaired as necessary to close any gaps, seal any joints, etc and essentially remain as is.

Window Systems

Windows in the 1940 section are wood sash, single pane, with aluminum storm windows.

The 1956 portion has had the windows replaced with aluminum frames and insulated glazing. That said, they are still quite old and not equal to today's performance.

The 1963 portion has original windows of single pane metal windows with aluminum storm sash added. Each classroom has been retrofitted with one emergency escape window as required by the Fire Safety code in buildings without full sprinkler protection.

The 1973 portion has original windows of aluminum frames and insulated glazing. Some were noted to have failed seals between the panes of glass and should be replaced. The frames do not appear to be thermally-broken and therefore transmit heat loss through the frame. We recommend replacement of the full window assembly to realize a consistent level of high performance window systems and consistent appearance for the building exterior.

The 1988 portion has original windows of aluminum frames and insulated glazing. These perform reasonably well and could remain. As a casement style window with a large operating sash, it is common to develop hardware and operational problems over time. The large sash does meet the size requirements for escape windows.

Based on the varied architectural styles of each building and windows, replacement of all windows with high performance frames and glazing, which address ultra violet and heat gain/loss is recommended; and would bring about a more uniform appearance.

Windows frames and sash should be of material that is maintenance free. The provision of glazing in the classroom is both an educational and psychological enhancement because it provides visual relief and outdoor observation opportunities. The provision of windows or glazing does, however, provide for heat loss or gain and a vulnerable point in security. The provision of solar block glazing is desirable and should be considered in each room.

Exterior Door Systems

Doors are most generally of the age matching the age of the building; therefore there is great inconsistency of material, condition, and hardware. Doors generally take a great deal of abuse with the frequency of use, therefore durability of the entire assembly (door, frame, hardware) is important. In recent years, issues of security have brought a new focus to door assemblies, their components, the location and relationship to certain interior spaces and the visibility in exterior areas.

The use of vestibules originally developed to control drafts, are evolving into a means of control for security.

Full replacement to hardware and door assemblies will enable durable construction with new hardware, keyed alike and master keyed; as well as the possible inclusion of electronic latching and monitoring of entries tied to a central control panel.

Interior Finishes

Interior walls are most generally masonry (concrete units of various finishes and some brick), with the notable exception of the 1940 (wood) construction.

The 1940 building is wood framed with a composite wood fiber board on wall surfaces and the original ceilings, currently concealed with newer ceilings suspended below.

Ceilings are generally acoustic panels in a grid suspended from the structure above. A variety of sizes and finishes exist. Systems work will require significant ceiling removal and reinstallation or replacement.

HAZARDOUS MATERIALS

The current AHERA report for asbestos containing materials, dated December 2008 provides an overview of suspected and known asbestos containing materials within the building. These materials are in the older sections from the 1940 up through the 1973 and possibly the 1988 addition. There is no known or suspected asbestos within the 1994 portion. Asbestos materials are generally concealed or non-friable.

Asbestos should be removed as encountered with systems replacement and program alterations.

MECHANICAL / ELECTRICAL SYSTEMS

Plumbing

Throughout the school there are different vintage plumbing fixtures. In general they are in good condition, considering their age. With the exception of the fixtures in the 1994 portion of the building, the plumbing fixtures do not meet present Code requirement for water saving. Also, there are no handicap accessible fixtures in the building, with the exception of the 1994 addition.

If the roofs are being renovated on the 1956, 1963, 1973 and 1988 portions of the building, it is possible that a new storm water drain system will have to be installed.

We recommend all bathroom facilities, with the exception of the 1994 addition, be upgraded and/or replaced.

1940-1988 Buildings

The HVAC systems for the rest of the building are in poor condition. There are reports of inadequate ventilation, uneven temperatures and poor indoor air quality.

Other than the 1988 portion of the building, the ventilation is natural type; open windows. This is not appropriate for cold days as the outdoor air can not be tempered. The 1988 portion requires modifications to meet current code levels and comparable performance for the other areas proposed to receive mechanical ventilation.

We recommend that a new mechanical ventilation system be installed. This will improve the indoor air quality, creating a healthier learning environment.

The heating plant consists of two oil fired boilers. These boilers appear to be the original ones. They are still working, but are in poor condition. The boilers do not have spare capacity. The plant is sized such that in order to satisfy the heating demand, both boilers will have to operate. The boiler room does not meet present Code requirements for combustion air. Oil for the boilers is stored in a 10,000gal underground fiberglass tank, installed in 1987.

The boilers shall be replaced with new more efficient ones. Boilers shall be sized for redundancy and shall have spare capacity to accommodate future loads. The circulating pumps shall be replaced at the same time as the boilers. Consider variable speed pumping for energy efficiency and consider alternative fuel solutions.

The HVAC system should have the following characteristics:

- Should provide sufficient ventilation in all rooms and bathrooms.
- Should minimize noise in the classroom from the systems to meet code requirements.
- Should be energy efficient and reliable.
- Should ensure air quality standards; filtering air borne allergens to acceptable levels.

Electrical

Service and Distribution

The building electrical service is 208Y/120 Volts, 3 phase, 4 wire, 1,200 Amp capacity and terminates in a main electrical room in the lower level of the 1973 building adjacent to the boiler room. Preliminary calculations indicate that the service capacity is marginal for a school facility of this size. Any further building additions or the installation of major HVAC equipment would certainly require that the service be upgraded. Service capacity limitations aside, voltage irregularities and other electrical problems have been reported and need to be addressed. There is no TVSS (surge suppression) device on the main distribution section which protects the electrical distribution system against voltage spikes and surges. There is also no single phase protection on the main. This feature would protect three phase motors and other three phase equipment from damage in the event that the utility loses a phase leg causing a partial outage. A digital meter is also lacking on the main distribution section which would be helpful in troubleshooting electrical problems. Finally, the distribution section of the switchboard is almost full and therefore has limited ability to serve new equipment or panelboards.

The existing panelboards (with the exception of the 1994 addition) are of mixed age and condition. Some panels are obsolete and lack adequate space to add branch circuits. Other panels were installed more recently and are equipped with TVSS devices where serving computer equipment. The system is not generally separated out by load types and clean power is not available for all sensitive equipment. Given the age of the distribution system it is likely that the older feeder and branch circuit neutral and grounding conductors are not adequate for the harmonic currents induced by modern day electronic equipment. The panelboards in the 1994 addition are in good condition and have adequate space to add more breakers.

The recommendations for the service and distribution system are as follows:

- Establish a new location for the main electrical room. The room should be adequately sized to accommodate a switchboard with increased capacity and breaker space to handle all building upgrades and technology improvements of this project.
- Replace the existing panelboards and feeders (with the exception of the 1994 addition). Arrange the system by load types: lighting, motor, convenience power, comport power and emergency power. Provide reliable, stable power to the building systems as needed.

- Replace existing branch circuits where found to be outdated or non code compliant, and as required for renovations. Extend and reconnect existing branch circuits that are to remain to the new branch circuit panelboards. Install new branch circuits as required.

Power in each classroom should come from two sources, one for exclusive use of computers and peripherals and the other for general use. A separate service for the technology infrastructure should be considered.

Fire Alarm System

The building areas 1940-1988 are equipped with smoke detectors throughout the egress corridors. Detection devices are also located in mechanical rooms and other hazardous spaces where there is a likelihood of fire without the benefit of occupants, and therefore a delay in notification. Pull stations are located at building egress doors. Upgrades to locations of horn strobe devices is recommended.

Technology

Through annual budgets, we have been supplying SMART Boards to each classroom. All rooms have wireless capability.

CODE

Accessibility

Currently this site provides some components of the ADA "accessible routes" from the parking to and through the building. Generally, accessibility throughout the building exists for persons with disabilities, which include two elevators and some ramps. There are toilet room and toilet fixture access issues, which will be addressed in toilet room alterations for all areas in the 1940-1988 building areas.

Further development of the accessible route is required throughout the building providing access to program areas with signage, while provided emergency egress from the building with proper notification and without steps or stairs to the Public Way.